

Exhibit No. 3Date 2-12-07Bill No. SS-9

## STATEMENT IN SUPPORT OF SENATE JOINT RESOLUTION 9

As a resident of Montana, I strongly urge the State Administration Committee to approve this resolution.

I support this resolution for the following reasons:

1. I firmly believe it is time for Montana to send a message to the federal government opposing the proposed increase in troop levels in Iraq.
2. My son, also a resident of Montana, is a soldier who has already served a year in Iraq. If his unit goes back to Iraq before his enlistment expires, he will be stop-lossed, and the army can keep him in Iraq indefinitely. His enlistment does not expire until March 2008.
3. The Coalition forces have used over 3,000 tons, that is 6,000,000 lbs, of depleted uranium munitions in Iraq as of this year. Up to 70% of this amount has become a radioactive dust with particles so small no gas mask or other breathing protector can filter them. These particles are ceramic. This means they do not dissolve in water and, once in the lungs, do not wash out of the body. They stay in the lungs emitting radiation forever. The half life of the radiation is 4.5 billion years.
4. My son undoubtedly encountered this dust while he was a gunner on a humvee, escorting convoys all over Iraq. If he goes back to Iraq, like so many soldiers who will be serving second, third, and fourth tours of duty in Iraq, his exposure to the radioactive dust will be increased.
5. The danger to him and to all military service members from Montana, both National Guard and regular Army, Navy or Air Force is real. The danger is that they will acquire irrevocable damage to their health, the health of their unborn children and their wives.
6. Some of the health dangers are: leukemia, lung cancer, loss of both short and long term memory, skin lesions, constant headaches, loss of a functional energy level, birth defects in children born to affected persons, cancer in spouses.

I am actively supporting not only measures to stop the increase in troop levels, but to remove from Iraq all the troops currently serving there. There is a grave risk that all of them could become permanently disabled and die prematurely. I also support efforts to stop the use of radioactive material in munitions and as armor on military vehicles.

Sincerely,

Deborah Hayden, 3309 Lilac Drive, Helena, MT.

**2007 Montana Legislature**

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**SENATE JOINT RESOLUTION NO. 9**

**INTRODUCED BY S. GALLUS**

A JOINT RESOLUTION OF THE SENATE AND THE HOUSE OF REPRESENTATIVES OF THE STATE OF MONTANA OPPOSING AN ESCALATION OF THE UNITED STATES INVOLVEMENT IN IRAQ; AND ASKING THAT THE PRESIDENT OBTAIN APPROVAL FROM CONGRESS BEFORE SENDING MORE AMERICAN SOLDIERS TO IRAQ.

WHEREAS, the President has proposed an escalation in the number of United States troops deployed in Iraq; and

WHEREAS, United States involvement in Iraq has resulted in the deaths of more than 3,000 United States troops and the wounding of more than 22,000 United States military personnel to date; and

WHEREAS, this proposed escalation will result in future National Guard tours in Iraq, with a significant percentage of Montana National Guard units having already completed tours in Iraq; and

WHEREAS, the cost to National Guard members for deployment in Iraq has been significant, as reckoned in lost lives, combat injuries, psychic trauma, disruption of family life, financial hardship for individuals, families, and businesses, interruption of careers, and damage to the fabric of civic life in our communities; and

WHEREAS, American troops have valiantly performed their duties in Iraq under dire circumstances; and

WHEREAS, the effect of the Iraq war on recruitment, retention, training, and morale of the United States Armed Forces has been significant; and

WHEREAS, Montanans have gone above and beyond the call of duty, with a large percentage of Montana men and women serving in Iraq and 14 Montanans giving their lives in Iraq as of December 31, 2006; and

WHEREAS, more than \$357 billion has been appropriated by Congress to fund military operations and reconstruction in Iraq to date, and an estimated monthly cost of \$7 billion for the conduct of the war adds to the burgeoning federal deficit and detracts from needed priorities at home; and

WHEREAS, a majority of Congress, the military, and the nation oppose the President's strategy of escalation; and

WHEREAS, Congress has broad authority and a long tradition of limiting escalation or forcing redeployment of troops through the power of the purse.

NOW, THEREFORE, BE IT RESOLVED BY THE SENATE AND THE HOUSE OF REPRESENTATIVES OF THE

STATE OF MONTANA:

That the Montana Legislature call on the United States government to not escalate its involvement in Iraq or increase troop levels.

BE IT FURTHER RESOLVED, that the President obtain approval from Congress before sending more American soldiers to Iraq.

BE IT FURTHER RESOLVED, that Congress condition appropriations toward the United States involvement in Iraq to prevent an escalation of the number of troops deployed and to ensure that currently deployed troops have needed resources.

BE IT FURTHER RESOLVED, that copies of this resolution be sent by the Secretary of State to the Honorable George W. Bush, President of the United States, the President of the United States Senate, the Speaker of the United States House of Representatives, the Majority and Minority Leaders of the United States Senate and House of Representatives, and each member of the Montana Congressional Delegation.

- END -

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**Latest Version of SJ 9 (SJ0009.01)**

Processed for the Web on January 31, 2007 (4:28pm)

New language in a bill appears underlined, deleted material appears stricken.

Sponsor names are handwritten on introduced bills, hence do not appear on the bill until it is reprinted.

See the [status of this bill](#) for the bill's primary sponsor.

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Prepared by Montana Legislative Services

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## DOUBT DEPLETED URANIUM'S DANGER?

Initially, it is very hard to know what to believe regarding the potential harms of depleted uranium (DU) munitions. Those of us in Helena who began investigating this issue several months ago did so without a predetermined conclusion. Our Depleted Uranium Education Project meetings have featured much discussion about sometimes conflicting data. We would love it if it proved to be the case that there were no radiation harms associated with DU, if its only long-term effects on the human body were due to its heavy metal toxicity. (I am startled to be embracing heavy metal harms as a best-case scenario.) However, my extensive reading of the scientific research in this area has led me to believe that DU munitions involve unacceptably high health risks from both radiation and heavy metal toxicity.

While some U.S. government documents claim that DU munitions pose negligible radiation risks, other government documents warn of potential radiation dangers, in addition to heavy metal harms. Here are a few examples:

"If DU enters the body, it has the potential to generate significant medical consequences. The risks associated with DU in the body are both chemical and radiological." "Personnel inside or near vehicles struck by DU penetrators could receive significant internal exposures."

From the Army Environmental Policy Institute (AEPI), *Health and Environmental Consequences of Depleted Uranium Use in the U.S. Army*, June 1995

"Short-term effects of high doses can result in death, while long-term effects of low doses have been implicated in cancer."

"Aerosol DU exposures to soldiers on the battlefield could be significant with potential radiological and toxicological effects."

From the Science Applications International Corporation (SAIC) report, included as Appendix D of AMMCOM's *Kinetic Energy Penetrator Long Term Strategy Study*, Danesi, July 1990.

"Inhaled insoluble oxides stay in the lungs longer and pose a potential cancer risk due to radiation. Ingested DU dust can also pose both a radioactive and a toxicity risk."

*Operation Desert Storm: Army Not Adequately Prepared to Deal With Depleted Uranium Contamination*, United States General Accounting Office (GAO/NSIAD-93-90), January 1993, pp. 17-18.

"The danger from depleted uranium shells comes from if they hit a tank and there's an explosion, there is an oxidization process that takes place, and there are dust particles. If that's inhaled, that can pose health problems." Secretary of Defense William S. Cohen, National Press Club, Washington, DC, Wednesday, January 10, 2001

How does an ordinary citizen exercise his or her responsibility in a matter such as this? Though I have earned a Ph.D. from Stanford University, it isn't in atomic physics or human physiology. So I am a non-expert attempting to understand the implications of my country's use of radioactive munitions. I have done much reading about DU in the last couple of months, concentrating on the scientific papers that have been published on the topic. Here are some facts that may be related to the on-going discussion.

The scientific literature states that when DU is made from natural uranium, it is 40 percent less radioactive than natural uranium. Natural uranium contains 0.72% U 235, which is a far more active emitter of radiation than U 238, which comprises 99% of natural uranium. About two thirds of the U 235 in natural uranium is removed (to enrich fuel for nuclear bombs and reactors), leaving what the nuclear industry and the military refer to as DU.

It is important to be aware that, in addition to DU coming from natural uranium, the US also makes nuclear fuel and bombs through a process known as reprocessing, where spent nuclear reactor fuel rods are the raw material rather than natural uranium. The DU left over from this process is contaminated with small amounts of extraordinarily radioactive and toxic transuranics such as plutonium (called the most toxic substance on earth), americium, and neptunium. Munitions made from DU via this reprocessing route could be significantly more harmful than munitions made from DU from natural uranium. However, my reading of the research on DU convinces me that even DU munitions made from natural uranium involve unacceptable risks from radiation. Those who claim that DU munitions pose negligible radiation risks are confusing the risks caused by intact DU with the very different risks associated with the microscopic, aerosolized, DU fume that is created when a DU kinetic penetrator (either bullet or shell) burns at 3000 to 6000 degrees Fahrenheit when it penetrates armor. The US Army states that a single Abrams tank DU shell produces 7 pounds of this microscopic dust when it penetrates armor. Up to 70% of the over 2000 tons of DU munitions shot by US troops in the past 15 years has been converted into this radioactive dust, whose particles can be as small as a nanometer. This is extraordinarily small. A millimeter is 1/1000th of a meter; a micron is 1/1000th of a millimeter; and a nanometer is 1/1000th of a micron. Think of how small a millimeter looks on your ruler; now divide the length of that millimeter into one million pieces: that is the size of a nanometer. (How many pieces is one million pieces? If you counted each second, beginning now, and counted without stop for 24 hours, it would take you more than 11 and a half days to reach one million. Try fitting that many divisions into your ruler's tiny

millimeter space.) There is no respirator that can filter out a particle that is this small. These vaporized DU particles are far smaller than the dust created by natural uranium miners and millers (studies of which have been erroneously used to estimate the harms caused by DU munitions). The intestines and then the kidneys are able to remove most natural uranium dust from the body. The small size of vaporized DU particles enable them to penetrate far deeper into an organism, down to the cellular level. There is another, very important difference about the nature of the particles in the vaporized DU fume that make studies based on conventional uranium dust inadequate. Not only does the 3000 to 6000 degrees Fahrenheit temperature fire created as a DU penetrator pierces armor create a metal fume of infinitesimally small particles, but it transforms these micro-particles into a ceramic form, just as a potter's kiln fires ordinary earth into something more like glass. Ceramicizing these uranium particles changes them from a water-soluble to an insoluble state. This is yet another difference about the dangers of DU particles that some conventional studies ignore, and so they underestimate their radiation harms. The body's protective, filtering, and excreting mechanisms depend of water-solubility to work. For this reason, a ceramicized DU particle is far more likely to persist in the body than a particle of DU that is water-soluble.

All right, a skeptic might say, so it persists in the body more than natural uranium; but DU, if it is made from natural uranium [a big "if"] it is 40 percent less radioactive than natural uranium, so even if it persists in the body, it can't do much damage. The skeptic is looking for good news, but the science is not so positive. A single milligram (0.0000352 ounce) of U 238, the isotope that comprises 99.8% percent of DU, gives off 1,071,000 alpha particles a day. If this milligram of DU is lodged in an organism, each of these alpha particles tears through the adjacent several cells of the organism with the force of 4 million electron volts. It takes only 6-10 electron volts to break a strand of DNA in a cell's nucleus. So each of these over one million alpha particles a day in a milligram of DU carries nearly one million times the force needed to break the DNA in the nucleus of a cell. As you know, damaged nuclear DNA can cause a cell to divide abnormally, potentially starting a cancer. If it is a testes, ovum, or fetal cell that suffers damage, the result could be a birth defect and/or damage to the inheritable DNA that is passed to future generations. And rather than delivering merely an initial, temporary assault, if a DU particle lodges permanently at a particular site in a body, it will continue to release its steady stream of alpha particles into its neighboring several cells for the rest of the life of the person, as the half life of U 238 is 4.5 billion years. In fact, in a worse-case scenario, this single DU micro-particle, after the first ingesting organism has died and decayed, could be ingested again and again, by subsequent organisms, perhaps millions of them, for the rest of all time (because 4.5 billion years from now this milligram of U 238 will now be  $\frac{1}{2}$  milligram of U 238, now emitting 535,000 alpha particles a day). Cancers sometimes take years or decades to develop, after the initial exposure -- a short length of time, indeed, in the life of a ceramicized DU micro-particle. But the potential damage that DU can cause to

the DNA of cell is only part of the story of the havoc that DU radiation might trigger in an organism.

All of the work that gets done in an organism is done by its great variety of specialized cells, and each of these cells has specific work responsibilities. As you'll recall from your high school biology class, it is the mitochondria of a cell that do the cell's functional work. While the nucleus of a cell has DNA, whose purpose is to create and reproduce a particular sort of cell, the mitochondria of a cell also has DNA, whose purpose is to create and direct the particular mitochondria that will carry out that cell's specific work responsibilities. Here, unfortunately, is more bad news for skeptics who doubt the ability of DU to cause radiation harms in an organism: the DNA in a cell's mitochondria is 16 times more vulnerable to radiation than the DNA in the nucleus of a cell. While the DNA in a cell's nucleus is protected by the nuclear membrane, the DNA in the mitochondria has no such additional wall of protection from radiation, as the mitochondria works, without armor, in the cellular fluid.

At least one-third of the nearly 600,000 US troops who served in the first Gulf War currently receive disability payments. Gulf War Syndrome is a veritable laundry list of maladies suffered by those who served in the first Gulf War, the first war to ever use DU munitions, where US troops fired 320 tons of DU kinetic penetrators, 70% of which became microscopic, ceramicized DU dust. While some disabled Gulf War vets have been identified with specific illnesses, most complain of general malaise, lack of vigor, poor sleep--in short, just poor human functioning. From experimental inoculations prior to going to Iraq to oil-well fires blackening Iraqi skies, the first Gulf War was a toxic soup; so many factors could be behind the poor health that many first Gulf War vets are currently suffering. However, it is possible that the poor functioning of these vets' bodies could be caused by DU-induced damage to the mitochondria of their cells. Cells with damaged mitochondria are not able to do their jobs. Under the radiation assault of DU at the cellular level, the specialized mitochondria are not able to efficiently and correctly perform the numerous work responsibilities that are needed for a body to experience good health. These jobs include the metabolizing of fuel, the clearing of wastes, the creation of vital enzymes, and the functioning of the immune system, among many others.

While I have focused on the potential radiation harms of DU, because this is what skeptics doubt, inhaled and ingested DU also can harm an organism because of its heavy metal toxicity. Even Pentagon apologists for DU all admit that it is a heavy metal toxin. In the body, heavy metals have been proven to cause numerous problems in organisms, including cancer and heart/circulation diseases, and the disruption of normal cellular processes that involve minerals that should be in the body.

But, as always seems to be the case with the harms caused by DU munitions, the special circumstances of the DU exposure route (3000-6000 degrees

Fahrenheit ceramicized metal fume micro-particalization, inhaled or ingested) causes more serve harm than would be caused by a more conventional exposure form and route. The ceramicized insolubility of the DU micro-particles makes it more likely that the heavy metal harms of DU will persist in vulnerable organs, as water-soluble particles are more likely to be washed out of the organs and cleared by the kidneys. Also, there is likely a synergistic toxicity of multiple metals caused by the DU penetrator vaporizing both its own DU and the other metals that it penetrates. Nickel, for instance, is a toxic heavy metal that is a component of steel, which the penetrator vaporizes when impacting a tank. It is likely that metal equipment in the tank that is penetrated will also be vaporized in the 3000-6000 degree firestorm. So the micro-particle fume that is ingested or inhaled could be a toxic mix of individual and alloy instances of uranium, nickel, aluminum, mercury, etc. Science has shown that the risk from multiple toxins is usually greater than the sum of their individual risks, as each toxin degrades the cells' ability to cope with the other toxins, as well as itself.

Considering all of the potential harms caused by using DU munitions, I am amazed that they are being used. I am amazed that supposedly rational and moral Americans proposed, manufactured, used, and defended the use of DU munitions. The only explanation that seems possible to me is that they didn't realize what they were doing; they don't realize what they are doing. I was also amazed when I heard that my government was using torture on suspects and arguing that it was legitimate to do so. I was also amazed when I heard that my government was suspending the writ of habeas corpus, holding people in prison indefinitely, without being charged, without access to an attorney or to anyone else, and claiming they had the right to do it. The leaders who have done these things apparently believe in a very different country than the one I was taught to believe in when I was a school child. I will not cede to them the right to corrupt America, to corrupt what it means to be an American. I will work to realize the America that I was taught to believe in during my youth.

Jonathan Matthews, Helena DU Education Project